

CLAIMS

1. A stent delivery system comprising:
 - a) a first introducer having proximal and distal ends comprising:
 - i) a first outer catheter having proximal and distal ends, the first outer catheter comprising:
 - A) a first proximal outer catheter having proximal and distal ends and a first proximal outer diameter; and
 - B) a first distal outer catheter having proximal and distal ends and a first distal outer diameter;wherein the first proximal outer catheter distal end is connected to the first distal outer catheter proximal end;
wherein the first proximal outer diameter is less than the first distal outer diameter;
 - ii) a first inner shaft located coaxially within said first outer catheter, the first inner shaft having proximal and distal ends, a first stent retaining area located on a distal portion of the first inner shaft; and
 - b) a second introducer having proximal and distal ends comprising:
 - i) a second outer catheter having proximal and distal ends, the second outer catheter comprising:
 - A) a second proximal catheter having proximal and distal ends and second proximal outer diameter; and
 - B) a second distal catheter having proximal and distal ends and a second distal outer diameter;

wherein the second proximal outer diameter is less than the second distal outer diameter; and

wherein the second proximal catheter distal end is connected to the second distal catheter proximal end;

ii) a second inner shaft located coaxially within said second outer catheter, the second shaft having proximal and distal ends, a second stent retaining area located on a distal portion of the second inner shaft;

wherein the stent delivery system includes an endoscope comprising a working channel having an inner diameter; and

wherein said first and second introducers are adapted to be disposed in an adjacent configuration within the working channel of the endoscope.

2. The stent delivery system of claim 1 wherein the first introducer further comprises a first stent having proximal and distal ends mounted on the first stent retaining area of the first inner shaft.

3. The stent delivery system of claim 2, wherein the first introducer further comprises a first pusher band attached to the first inner shaft.

4. The stent delivery system of claim 3 wherein the proximal end of the first stent abuts the first pusher band.

5. The stent delivery system of claim 1, wherein the first introducer further comprises a first wire guide lumen.

6. The stent delivery system of claim 5, wherein the first wire guide lumen extends through at least a portion of the first introducer.

7. The stent delivery system of claim 5, wherein the first wire guide lumen extends through at least a portion of the first inner shaft.

8. The stent delivery system of claim 5, wherein the first wire guide lumen extends proximally from the first introducer distal end for a distance of up to about 20 cm.

9. The stent delivery system of claim 5, wherein the first wire guide lumen extends proximally from the first introducer distal end for a distance of up to about 1 cm.

10. The stent delivery system of claim 1, wherein the first introducer further comprises a first stent tip attached to the distal end of the first inner shaft.

11. The stent delivery system of claim 10, wherein the first stent tip is tapered.

12. The stent delivery system of claim 1, wherein the first proximal outer catheter and the first distal outer catheter comprise two separate catheters.

13. The stent delivery system of claim 1, wherein the sum of the first proximal outer diameter and the second distal outer diameter is less than the inner diameter of the working channel of the endoscope.

14. The stent delivery system of claim 1 wherein the sum of the first proximal outer diameter and the second distal outer diameter and at least one of a first and second wire guide diameters is less than the inner diameter of the working channel of the endoscope.

15. The stent delivery system of claim 1, wherein the first proximal outer catheter is disposed adjacent to the second distal outer catheter while inside the working channel of the endoscope.

16. The stent delivery system of claim 1, wherein the first proximal outer diameter is disposed adjacent to the second distal outer diameter while inside the working channel of the endoscope.

17. The stent delivery system of claim 1 wherein the working channel of the endoscope comprises an inner diameter of about 3.0 to about 4.5 mm.

18. The stent delivery system of claim 1 wherein said the first proximal outer diameter is about 5.0 to about 6.0 French.

19. The stent delivery system of claim 1 wherein the first distal outer diameter is about 6.0 to about 7.0 French.

20. A stent delivery system comprising:

a) a first introducer comprising:

i) an first outer catheter having proximal and distal ends, the first outer catheter comprising:

A) a first proximal outer catheter having proximal and distal ends and a first proximal outer diameter; and

B) a first distal outer catheter having proximal and distal ends and a first distal outer diameter;

wherein the first proximal outer diameter is less than the first distal outer diameter;

wherein the first proximal outer catheter distal end is connected to the first distal outer catheter proximal end;

ii) a first inner shaft located coaxially within said first outer catheter, the first inner shaft having proximal and distal ends, a first stent retaining area located on a distal portion of the first inner shaft, a first pusher band located proximate the first stent retaining area;

iii) a first stent tip attached to the distal end of the first inner shaft;

iv) a first stent having proximal and distal ends mounted on the first stent retaining area of the inner shaft such that the first stent proximal end abuts the first pusher band;

v) a first wire guide lumen extending proximally from the first introducer distal end through at least a portion of the first introducer;

b) a second introducer comprising:

i) an second outer catheter having proximal and distal ends, the second outer catheter comprising:

A) a second proximal outer catheter having proximal and distal ends and second proximal outer diameter; and

B) a second distal outer catheter having proximal and distal ends and a second distal outer diameter;

wherein the second proximal outer diameter is less than the second distal outer diameter; and

wherein the second proximal outer catheter distal end is connected to the second distal outer catheter proximal end;

ii) a second inner shaft located coaxially within said second outer catheter, the second shaft having proximal and distal ends, a second stent retaining area located on a distal portion of the second inner shaft, a second pusher band located proximate the second stent retaining area; and

iii) a second stent tip attached to the distal end of the second inner shaft;

iv) a second stent having proximal and distal ends mounted on the second stent retaining area of the second inner shaft such that the second stent proximal end abuts the second pusher band;

v) a second wire guide lumen extending proximally from the second introducer distal end through at least a portion of the second introducer;

wherein the stent delivery system includes an endoscope comprising a working channel having an inner diameter; and

wherein said first and second introducers are adapted to be disposed in an adjacent configuration within the working channel of the endoscope.

21. The stent delivery system of claim 20, wherein the sum of the first proximal outer diameter and the second distal outer diameter is less than the inner diameter of the working channel of the endoscope.

22. The stent delivery system of claim 20, wherein the sum of the first proximal outer diameter, the second distal outer diameter and at least one of a first and second wire guide diameters is less than the inner diameter of the working channel of the endoscope.

23. The stent delivery system of claim 20, wherein the first proximal outer diameter is disposed adjacent to the second distal outer diameter while inside the working channel of the endoscope.

24. A method for placing first and second stents into a bifurcation having a main lumen and first and second branch lumens using the stent delivery system of claim 20 comprising the steps of:

a) placing a first and a second wire guide in the working channel of the endoscope;

b) placing the first wire guide into the main lumen and the first branch lumen of the bifurcation and placing the second wire guide into the main lumen and the second branch lumen of the bifurcation;

c) inserting the first introducer and the second introducer into the working channel of the endoscope; and

d) advancing the first introducer over the first wire guide into the main lumen and the first branch lumen of the bifurcation and advancing the second introducer over the second wire guide into the main lumen and the second branch lumen of the of the bifurcation such that the first and second introducers are simultaneously positioned within the main lumen and the first and second branch lumens of the bifurcation.

25. The method of claim 24, wherein step d) further comprises advancing the first and second introducers over the first and second wire guides such that the first distal portion of the first introducer is distal to the second distal portion of the second introducer.

26. A method of placing a first stent within a first branch lumen and a main lumen of a bifurcation and placing a second stent within a second branch lumen and the main lumen of the bifurcation comprising the steps of:

a) providing an endoscope having a working channel, the endoscope further comprising a first introducer having the first stent retained on a first distal portion and a second introducer having the second stent retained on a second distal portion, the first and second introducers being adapted to be disposed in an adjacent configuration within the working channel of the endoscope;

b) placing a first wire guide into the main lumen and the first branch lumen of the bifurcation and placing a second wire guide into the main lumen and the second branch lumen of the bifurcation; and

c) advancing the first introducer over the first wire guide into the main lumen and the first branch lumen of the bifurcation and advancing the second introducer over the second wire guide into the main lumen and the second branch lumen of the bifurcation such that the first and second introducers are

simultaneously positioned within the main lumen and the first and second branch lumens of the bifurcation.

27. The method of claim 26 further comprising the step of:

d) deploying the first stent within the first branch lumen and the main lumen of the bifurcation.

28. The method of claim 26 further comprising the step of:

d) simultaneously deploying the first and second stents within the first and second branch lumens and the main lumen of the bifurcation.

29. The method of claim 26, wherein the first introducer further comprises a first proximal portion having a first proximal diameter and the first distal portion retaining the first stent comprises a distal diameter, the first distal diameter being greater than the first proximal diameter;

wherein the second introducer further comprises a second proximal portion having a second proximal diameter and the second distal portion retaining the second stent comprises a distal diameter, wherein the second distal diameter is greater than the second proximal diameter; and

wherein step a) further comprises disposing the first introducer and the second introducer within the working channel of the endoscope such that the first proximal outer diameter is disposed adjacent to the second distal outer diameter while inside the working channel of the endoscope

30. A method of placing first and second stents in first and second branch lumens and a main lumen of a bifurcation comprising the steps of:

positioning the first stent within the first branch and the main lumen of the bifurcation such that a distal portion of the first stent extends at least partially within the first branch of the bifurcation and a proximal portion of the first stent extends at least partially within the main lumen of the bifurcation;

positioning the second stent within the second branch and the main lumen of the bifurcation such that a distal portion of the second stent extends at least partially within the second branch of the bifurcation and a proximal portion of the second stent extends at least partially within the main lumen of the bifurcation;
and

deploying the first and second stents within the bifurcation.

31. The method of claim 30 wherein access to the second branch lumen remains open as the first stent is positioned within the first branch lumen and main lumen.

32. The method of claim 30 wherein the first and second stents are deployed simultaneously.